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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,029	11/26/2003	Geun Su Lee	30205/39714	1786
4743	7590	08/28/2006	EXAMINER	
MARSHALL, GERSTEIN & BORUN LLP 233 S. WACKER DRIVE, SUITE 6300 SEARS TOWER CHICAGO, IL 60606			WEBB, GREGORY E	
		ART UNIT		PAPER NUMBER
				1751

DATE MAILED: 08/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/723,029	LEE ET AL.	
	Examiner Gregory E. Webb	Art Unit 1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 6/2/06.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-23 is/are pending in the application.
 4a) Of the above claim(s) 20-23 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-19 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0306;0904;1103</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6/2/06 have been fully considered but they are not persuasive.
2. The applicant argues that the invention are related by the composition of group I. Although the examiner does not disagree with this argument, it was not the point of the original restriction. The restriction was based on different modes of action. Group I has a mode of action as a composition. Group II has a mode of action as a process of making. And finally group III has a mode of action as a product. Each of these three separate inventions requires wholly separate and independent searches.
3. For example, the examiner does not give strong weight to the intended use of the composition of group I. Therefore, the examiner need only search the ingredients listed. This is clearly not true of group II and group III. Should the examiner find a paint stripper meeting the material limitations of claim 1, this reference clearly could not be applied to the method of group II.
4. Thus the restriction is maintained.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

The surfactant of claim 1 can be described in several ways. First the compound can be considered a phosphate, a phosphate ester, or a phosphoric acid ester, an alkyl phosphate salt, an alkyl phosphoric acid salt, etc. Second, the group found on the left can be described as a ethoxy group, an ethoxylate, a propoxylated, an alkoxylation, an alkoxy group, etc. Finally, the group on the right of the formula can be described as a alkanolamines, ethanolamine, monoethanolamine, or an ammonium hydroxide (when x,y,z=0).

As the surfactant is a salt, in other words a reaction of a negative anion, the phosphate, with a positive ion, the alkanolamines, the examiner need not find the exact formula. But would only be required to find the ethoxylated alkyl phosphoric acid in a solution with an

alkanolamines. As the two charges are positive and negative, these two groups would inherently form the salt found in claim 1.

Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Chihara, Machio (US5256209).

Concerning the phosphate, Chihara, Machio teaches the following:

Particularly preferred **phosphate** anionic surfactants are polyoxyalkylene **phosphate** surfactants of the formula (3) wherein R.⁵ is a straight- or branched-chain alkyl group having 10 to 15 carbon atoms, n is an integer of 8 to 12 and X is a hydroxyl group or a group of the formula (4) (*emphasis added*)

Concerning the alkanolamine, alkanolamine salt and the alcohol, Chihara, Machio teaches the following:

wherein R.⁶ is a straight- or branched-chain alkyl group having 5 to 20 carbon atoms, phenyl group, or a phenyl group substituted with a straight- or branched-chain alkyl group having 7 to 12 carbon atoms and n is as defined above, or salts thereof. Examples of such salts are metal salts such as sodium salt and potassium salt, ammonium salts, **alkanolamine** salts such as **monoethanolamine** salt, **diethanolamine** salt or **triethanolamine** salt and the like. (*emphasis added*)

Concerning the alkoxyalkyl alcohol, Chihara, Machio teaches the following:

Examples of the **glycol ether** compounds of the formula (1), i.e., Component (A) of the cleaning agent for the rosin-base solder flux of the invention, are diethylene glycol monomethyl ether, diethylene glycol dimethyl ether, diethylene glycol monoethyl ether, diethylene glycol diethyl ether, diethylene glycol methyl ethyl ether, diethylene glycol monopropyl ether, diethylene glycol dipropyl ether, diethylene glycol methyl propyl ether, diethylene glycol ethyl propyl ether, diethylene glycol monobutyl ether, diethylene glycol dibutyl ether, diethylene glycol methyl butyl ether, diethylene glycol ethyl butyl ether, diethylene glycol propyl butyl ether, diethylene glycol monopentyl ether, diethylene glycol dipentyl ether, diethylene glycol methyl pentyl ether, diethylene glycol ethyl pentyl ether, diethylene glycol propyl pentyl ether, diethylene glycol butyl pentyl ether; the corresponding tri- or tetraethylene **glycol ethers**; and the corresponding di-, tri- or tetrapropylene **glycol ethers**, etc. These compounds are usable singly or at least two of them can be used in a suitable combination. (*emphasis added*)

Concerning the commercial phosphate ester surfactants, Chihara, Machio teaches the following:

The polyoxyalkylene phosphate surfactants represented by the formula (3) and the salts thereof are widely marketed, for example, under the tradenames of "PLYSURF" series (products of Dai-ichi Kogyo Seiyaku Co., Ltd.), "N-

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1000FCP", "RA-574" and "RA-579" (products of Nihon Nyukazai Kabushiki Kaisha) and the like. (*emphasis added*)

6. Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Dellinger, Matthew H. (US4784777).

Concerning the phosphate and the phosphate ester, Dellinger, Matthew H. teaches the following:

Illustrative types of organic **phosphate** ester surfactants include, but are not limited to, an alkali metal salt of a **phosphated**, ethoxylated C_{sub.8-18}-alkyl and -alkenylamine oxide, which may be amphoteric at approximately neutral pH, and a free-acid form of an anionic, polyethoxylated C_{sub.8-12}-alkyl ether **phosphate** having about 2 to 6 oxyethylene groups per side chain. A specific example of the first type of **phosphate** ester is the potassium salt of a complex mono- and diester mixture of a **phosphated** n,n-bis(hydroxyethyl) coco amine oxide, which is sold by Jordan Chemical Company as Jorphox KCAO, and a specific example of the second type of **phosphate** ester is a free-acid form of a complex mono- and diester mixture of polyoxyethylene(4)decyl ether **phosphate**, which has an acid number (mg KOH/g) of about 125 to 135 at about pH 5.0 to 5.5, and which is available under the name Cedephos FA-600M from Miranol Chemical Company, Inc. (*emphasis added*)

Concerning the alkanolamine, alcohol and the phosphate ester surfactant, Dellinger, Matthew H. teaches the following:

An anionic surfactant useful in my composition, will usually be a salt of an alkali metal such as sodium or potassium, an ammonium salt, or a salt of an amine such as an **alkanolamine** having 1 to 3 alkanol groups each of 2 to 3 carbon atoms such as mono-, di-, or triethanolamine. However, an anionic organic **phosphate ester surfactant** may be in the free-acid form. (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Hanaoka, Hideyuki (US4169068).

Concerning the phosphate, Hanaoka, Hideyuki teaches the following:

By "acid esters of **phosphoric acid**" are meant a variety of esters having the general formula PO(OR)_{sub.2} OH or PO(OR)(OH)_{sub.2}. Especially preferred is the **phosphate** of polyoxyethylene alkyl (aryl) ether expressed by the general

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formula ##STR2## (wherein R' is an alkyl or alkylaryl group, A is hydrogen or R', and n is the number of moles of ethylene oxide added). (*emphasis added*)

Concerning the alkanolamine and the alcohol, Hanaoka, Hideyuki teaches the following:

Of polyhydric **alcohols**, dihydrics include such glycols as ethylene, glycol, propylene glycol, trimethylene glycol, and neopentyl glycol; dihydric **alcohols** containing ether bonds, such as diethylene glycol and dipropylene glycol; dihydric **alcohols** derived through nitrogen, such as **diethanolamine**, n--C_{sub}.12 H_{sub}.25 CON(C_{sub}.2 H_{sub}.4 OH)_{sub}.2 ; and dihydric **alcohols** containing ester bonds, such as oleic acid monoglyceride. (*emphasis added*)

Concerning the preferred intended use, Hanaoka, Hideyuki teaches the following:

The **photoresist** used in Example 1 and the commercially available **photoresist** used in Example 3 were treated with hot, concentrated sulfuric acid. The results were as tabulated below. (*emphasis added*)

Concerning the commercial phosphate ester surfactants, Hanaoka, Hideyuki teaches the following:

Stripping agent Treatment Resist Literature

Dimethylsulfoxide 30 ml No Japanese Patent 100.degree. C. 1 hr change Publication
Methyl glycol 70 ml No. 12925/70 Trichloroethylene 60 ml No Japanese Patent
Ethylene glycol 60.degree. C. 1 hr change Publication monoethyl ether 20 ml No.
5961/71 Ethylene glycol 10 ml Formic acid 10 ml Water 50 g No Japanese Patent
Sodium hydroxide 50 g 150.degree. C. 1 hr change Publication No. 43123/71 Phenol
50 g Rape oil 60 g Benzyl alcohol 20 g No Japanese Patent 100.degree. C. 1 hr
change Publication n-Amyl acetate 4 g No. 18922/71 "Plysurf A 208B"** 1 g
Dodecylbenzene- sulfonic acid 35 g No Japanese Patent 90.degree. C. 30 change
Application "Solvesso 150"** 65 g min Disclosure No. 72503/76 "Stripping liquor No
(Rubber strip- 503 for OMR"*** 90.degree. C. 30 change ping liquor min sold by
Tokyo Ohka Kogyo Company)

*Trade designation of phosphoric ester of polyoxyethylene alkylaryl ether made by Dai-ichi Kogyo Seiyaku Company. **Trade designation of an Esso Chemicals Company product comprising 98% aromatics, B.P. 150.degree.-200.degree. C. ***A product of Tokyo Ohka Kogyo Company consisting essentially of o-dichlorobenzene.
(*emphasis added*)

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Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe, Yumiko (US6730644).

Concerning the phosphate, Abe, Yumiko teaches the following:

The invention further relates to the before-mentioned cleaning solution, wherein the dispersant is one or more member(s) selected from a group consisting of condensed **phosphoric acids** and **phosphates**. (*emphasis added*)

Concerning the alcohol and the alkoxyalkyl alcohol, Abe, Yumiko teaches the following:

As water-soluble **alcohols** **methanol**, **ethanol**, **1-propanol**, **2-propanol**, **2-methyl-1-propanol**, **2-methoxyethanol**, etc. can be used. The concentration of the water-soluble **alcohols** is 0.01 to 30 mass percentages, particularly preferable is 1 to 10 mass percentages. (*emphasis added*)

Concerning the preferred intended use, Abe, Yumiko teaches the following:

The **wafers** were cleaned for 3 min. at 25.degree. C. with the cleaning solutions of Examples 1 to 6 and Comparative Examples 1 and 2, rinsed and dried, after which the Fe concentration at the **wafer** surface was again measured, and the capacity for removing Fe was evaluated. The result is shown in Table 4. (*emphasis added*)

Concerning the commercial phosphate ester surfactants, Abe, Yumiko teaches the following:

TABLE 1 Organic acid Dispersant, surfactant, Cleaning compound chelating agent, water soluble solution (mass percentages) alcohol (mass percentages) Example 1 Oxalic acid 0.34 Disrol H14N 0.01 Example 2 Oxalic acid 0.34 Polity 550 0.01 Example 3 Oxalic acid 0.34 Sorpol 9047K 0.01 Example 4 Oxalic acid 0.34 **Newcol** 707SF 0.01 Example 5 Oxalic acid 0.34 Rheodol Super TW-0120 0.01 Example 6 Oxalic acid 0.34 Pyrophosphoric acid 0.01 Example 7 Oxalic acid 0.34 Demol AS 0.01 Example 8 Oxalic acid 0.03 Demol AS 0.001 Example 9 Oxalic acid 3.40 Demol AS 0.1 Example 10 Oxalic acid 0.34 Phytic acid 0.01 Example 11 Oxalic acid 0.34 NIKKOL TDP-8 0.01 Example 12 Oxalic acid 0.34 **Newcol** 560SF 0.01 Phytic acid 0.01 2-propanol 1.0 Example 13 Malonic acid 0.5 Demol AS 0.1 Example 14 Citric acid 10.0 Demol AS 1.0 Example 15 Ammonium oxalate **Newcol** 707SF 0.01 0.2 Example 16 Oxalic acid 0.34 Ethylene diamine 0.01 tetraacetic acid diammonium salt **Newcol** 560SF 1.0 Example 17 Triammonium Phytic acid 1.0 citrate 1.0 Nitrilotriacetic acid 0.01 Example 18 Oxalic acid 2.0 **Newcol** 560SF 0.01 Phytic acid 0.01 2-propanol 10.0 Comp. Ex. 1 Oxalic acid 0.34 -- Comp. Ex. 2 Citric acid 0.50 -- Comp. Ex. 3 -- Demol AS 0.01 Comp. Ex. 4 Oxalic acid 0.34 tetradecyl trimethyl- 0.01 ammonium chloride Note: Disrol H14N, **Newcol** 560SF and **Newcol** 707SF are products of Nippon Nyukazai Co., Ltd. Polity 550 is a product of Lion Corp. Sorpol 9047K is a product of Toho Chemical Industry

Co., Ltd. Rheodol Super TW-0120 and Demol AS are products of KAO Soap Co., Ltd.

NIKKOL TDP-8 is a product of Nikko Chemicals Co., Ltd.

(*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaneko, Fumitake (US20040121615).

Concerning the phosphate, phosphate ester and the commercial phosphate ester surfactants, Kaneko, Fumitake teaches the following:

[0052] To mention specific examples, **phosphate esters** of polyoxyethylene that can be used as surfactants are commercially available under trade names "PLYSURF A212E" and "PLYSURF A210G" from Dai-ichi Kogyo Seiyaku Co., Ltd. (*emphasis added*)

Concerning the alkanolamine and the alcohol, Kaneko, Fumitake teaches the following:

[0035] The over-coating agent for forming fine patterns may additionally contain water-soluble amines. Preferred ones include amines having pKa (acid dissociation constant) values of 7.5-13 in aqueous solution at 25.degree. C. in view of the prevention of the generation of impurities and pH adjustment. Specific examples include the following: **alkanolamines**, such as **monoethanolamine**, **diethanolamine**, **triethanolamine**, 2-(2-aminoethoxy)ethanol, N,N-dimethylethanolamine, N,N-diethylethanolamine, N,N-dibutylethanolamine, N-methylethanolamine, N-ethylethanolamine, N-butylethanolamine, N-methyldiethanolamine, monoisopropanolamine, diisopropanolamine and triisopropanolamine; polyalkylenepolyamines, such as diethylenetriamine, triethylenetetramine, propylenediamine, N,N-diethylethylenediamine, 1,4-butanediamine, N-ethylmethylenediamine, 1,2-propanediamine, 1,3-propanediamine and 1,6-hexanediamine; aliphatic amines, such as triethylamine, 2-ethyl-hexylamine, dioctylamine, tributylamine, tripropylamine, triallylamine, heptylamine and cyclohexylamine; aromatic amines, such as benzylamine and diphenylamine; and cyclic amines, such as piperazine, N-methyl-piperazine and hydroxyethylpiperazine. Preferred water-soluble amines are those having boiling points of 140.degree. C. (760 mmHg) and above, as exemplified by **monoethanolamine** and **triethanolamine**. (*emphasis added*)

Concerning the preferred intended use, Kaneko, Fumitake teaches the following:

[0058] The heating temperature is not limited to any particular value as long as it is high enough to cause thermal shrinkage of the film of the over-coating agent and form or define a fine pattern. Heating is preferably done at a temperature that will not cause thermal fluidizing of the photoresist pattern. The temperature that will not cause thermal fluidizing of the photoresist pattern is such a temperature that when a substrate on which the photoresist pattern has been formed but no

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film of the over-coating agent has been formed is heated, the **photoresist** pattern will not experience any dimensional changes. Performing a heat treatment under such temperature conditions is very effective for various reasons, e.g. a fine-line pattern of good profile can be formed more efficiently and the duty ratio in the plane of a **wafer**, or the dependency on the spacing between **photoresist** patterns in the plane of a **wafer**, can be reduced. Considering the softening points of a variety of **photoresist** compositions employed in current photolithographic techniques, the preferred heat treatment is usually performed within a temperature range of about 80-160.degree. C. for 30-90 seconds, provided that the temperature is not high enough to cause thermal fluidizing of the **photoresist**. (*emphasis added*)

Concerning the phosphate ester surfactant, Kaneko, Fumitake teaches the following:

[0068] A copolymer including polyacrylate (PAA) and polyvinylpyrrolidone (PVP) [2 g: PAA/PVP=2:1 (polymerization ratio)], triethanolamine (0.18 g) and a polyoxyethylene **phosphate ester surfactant** (0.02 g; "PLYSURF A210G", product of Dai-ichi Kogyo Seiyaku Co, Ltd.) were dissolved in water (52 g) to prepare an over-coating agent. (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Anzures, Edgardo (US6887654).

Concerning the phosphate, alkanolamine and the alcohol, Anzures, Edgardo teaches the following:

A particularly preferred tristyrylphenol alkoxylate is a tristyrylphenol ethoxylate having the general formula: ##STR1## where m is an integer of from 8 to 40, preferably from 10 to 20 and most preferably from 14 to 18. Salts of the tristyrylphenol ethoxylate also may be employed such as the sulfate or **phosphate**, including esters thereof, for example, metal salts, such as alkali metal or alkaline earth metal salts, for example sodium, potassium, calcium, or magnesium salts or salts with ammonia or an organic amine, such as morpholine, piperidine, pyrrolidine, a mono-, di-, or tri-hydroxy-lower alkylamine, for example mono, di, or tri-**ethanolamine**. (*emphasis added*)

Concerning the phosphate ester, Anzures, Edgardo teaches the following:

Illustrative of suitable tristyrylphenol ethoxylates that may be used to practice the present invention include tristyrylphenol ethoxylate (8 moles of ethylene oxide), tristyrylphenol ethoxylate (16 moles of ethylene oxide), tristyrylphenol ethoxylate (20 moles of ethylene oxide), tristyrylphenol ethoxylate (25 moles of ethylene oxide), tristyrylphenol ethoxylate (40 moles of ethylene oxide), tristyrylphenol ethoxylate/propoxylate, tristyrylphenol ethoxylate **phosphate ester** (free acid), tristyrylphenol ethoxylate **phosphate ester** (potassium salt), and ammonium tristyrylphenol ethoxylate sulfate. Such compounds may be prepared by known

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methods in the art, or obtained commercially under the trade name product Soprophor® (obtainable from Rhodia). Examples of commercially available Soprophor® include Soprophor® BSU where m=16, and Soprophor® S/40-P where m=40. U.S. Pat. Nos. 5,463,101 and 5,874,495 disclose methods of preparing tristyrylphenols, the entire disclosures of which are incorporated herein by reference. (*emphasis added*)

Concerning the preferred intended use, Anzures, Edgardo teaches the following:

Contaminants such as built-up organic residue and scum from photolithographic compositions present difficult cleaning problems for the electronics industry. Photolithographic residue and scum such as from **photoresist** developer solutions, stripper solutions and the like can build-up on various products and apparatus. Photoresist materials are employed in the manufacturing of **semiconductor** devices, and electronic components such as integrated circuits, photomasks for the manufacturing of integrated circuits, printed wiring boards and the like as well as planographic printing plates. In photolithographic processing, a substrate surface is coated with a **photoresist**, i.e., a coating composition that is sensitive to actinic radiation, e.g., ultraviolet light, X-rays, electron beams and the like, to give a layer that is sensitive to actinic radiation which is irradiated pattern-wise with the actinic radiation. The irradiated **photoresist** is then developed with a developer solution to form a patterned **photoresist** layer that serves to selectively protect the substrate surface from etching, plating or diffusion of dopants. (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawakami, Shugo (US7018964).

Concerning the phosphate and the commercial phosphate ester surfactants, Kawakami, Shugo teaches the following:

Various known surfactants can be used as the polyoxyalkylenephosphoric ester surfactant (C) without limitation. Such known polyoxyalkylenephosphoric ester surfactants include, for example, "PLYSURF" series (trade name, manufactured by Dai-ichi Kogyo Seiyaku Co., Ltd.). (*emphasis added*)

Concerning the alkanolamine and the alkanolamine salt, Kawakami, Shugo teaches the following:

In view of detergency, properties for environmental protection and low flammability, it is preferred to use a polyoxyethylenephosphoric ester surfactant represented by the formula (3) or a salt thereof: ##STR10## wherein R₄ represents a straight-chain or branched-chain alkyl group having 5 to 20 carbon atoms, a phenyl group or a phenyl group substituted with a straight-chain or branched-chain alkyl group having 7 to 12 carbon atoms, n represents an integer of 0 to 20 and X represents a hydroxyl group or a group represented by the formula (4)

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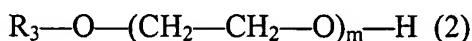
wherein R_5 represents a straight-chain or branched-chain alkyl group having 5 to 20 carbon atoms, a phenyl group or a phenyl group substituted with a straight-chain or branched-chain alkyl group having 7 to 12 carbon atoms, and n represents an integer of 0 to 20. Examples of the salts are sodium salts, potassium salts and like metal salts, ammonium salts and **alkanolamine** salts having 1 to 20 carbon atoms. (*emphasis added*)

Concerning the alcohol, Kawakami, Shugo teaches the following:

Examples of the compounds (E) are **benzyl alcohol**, **1-phenylethanol**, **1-phenylpropanol**, **1-phenylbutanol**, **1-phenylpentanol**, **1-phenylhexanol**, **1-phenyl-3-methylbutanol**, **1-phenyl-3-methylpentanol**, **1-phenyl-4-methylpentanol**, **1-phenyl-2-methylpentanol**, **1-phenyl-2,3-dimethylpentanol**, **1-phenyl-2,2-dimethylpentanol**, **1-phenyl-2-methylpropanol**, **1-phenyl-2-methylbutanol**, **1-phenyl-3,3-dimethylbutanol**, **1-phenyl-2,2-dimethylpropanol**, etc. These compounds can be used either alone or in a suitable combination. Among the compounds represented by the formula (6), preferred are **benzyl alcohol**, **1-phenylethanol**, **1-phenylpropanol**, **1-phenylbutanol**, **1-phenylpentanol**, **1-phenylhexanol** and the like for their high foam breakability. Among them, **benzyl alcohol** is more preferred. (*emphasis added*)

Concerning the alkoxyalkyl alcohol, Kawakami, Shugo teaches the following:

Among these examples of the nonionic surfactant (B), a polyalkylene **glycol ether** type nonionic surfactant is preferable in view of its detergency. Among them, more preferable are polyethylene **glycol ether** type nonionic surfactants among which polyoxyethylenealkyl ether represented by the formula (2) is more preferable:



wherein R_3 represents a straight-chain or branched-chain alkyl group having 6 to 20 carbon atoms, a phenyl group or a phenyl group substituted with a straight-chain or branched-chain alkyl group having 7 to 12 carbon atoms and m represents an integer of 2 to 20. Preferred group of R_3 is a straight-chain or branched-chain alkyl group having 6 to 20 carbon atoms, and more preferred group of R_3 is a straight-chain or branched-chain alkyl group having 10 to 16 carbon atoms. In the formula (2), m is preferably an integer of 3 to 16.

4) Surfactant (C) and Surfactant (D) (*emphasis added*)

Concerning the preferred intended use, Kawakami, Shugo teaches the following:

The cleaning composition of the present invention shows high detergency in cleaning various processed metal parts, ceramic parts, electronic parts and the like. The cleaning composition of the present invention shows remarkable

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detergency compared with known glycol ether detergent, especially when used for cleaning flip chip devices having thereon large amounts of residual thixotropic agent, thickener and the like, such as PGA, BGA, CSP and MCM, and particularly a **wafer** level CSP produced by a printing method using a solder paste, interposer and the like. (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Abe, Hisaki (US20030152874).

Concerning the phosphate, phosphate ester and the phosphate ester surfactant, Abe, Hisaki teaches the following:

[0020] Examples of phosphorus-containing compounds serving as the component (d) of the present invention include **phosphoric acids, phosphate ester surfactants, and phosphonic acid chelating agents**. Specific examples of the **phosphoric acids** include **phosphoric acids** such as **orthophosphoric acid, hypophosphoric acid, phosphorous acid, and hypophosphorous acid; pyrophosphoric acid, trimetaphosphoric acid, tetrametaphosphoric acid, orthophosphorous acid, and polymetaphosphorous acid**. In addition, salts such as ammonium salts, amine salts, and quaternary ammonium salts of these **phosphoric acids** may also be used. (*emphasis added*)

Concerning the alkanolamine and the alcohol, Abe, Hisaki teaches the following:

[0012] Examples of **alkanolamines** falling under the definition of the component (a) employed in the present invention include aliphatic **alkanolamines**. Specific examples include **ethanolamine, N-methylethanolamine, N-ethylethanolamine, N-propylethanolamine, N-butylethanolamine, diethanolamine, triethanolamine, N-methyldiethanolamine, N-ethyldiethanolamine, isopropanolamine, diisopropanolamine, triisopropanolamine, N-methylisopropanolamine, N-ethylisopropanolamine, N-propylisopropanolamine, 2-aminopropan-1-ol, N-methyl-2-aminopropan-1-ol, N-ethyl-2-aminopropan-1-ol, 1-aminopropan-3-ol, N-methyl-1-aminopropan-3-ol, N-ethyl-1-aminopropan-3-ol, 1-aminobutan-2-ol, N-methyl-1-aminobutan-2-ol, N-ethyl-1-aminobutan-2-ol, 2-aminobutan-1-ol, N-methyl-2-aminobutan-1-ol, N-ethyl-2-aminobutan-1-ol, 3-aminobutan-1-ol, N-methyl-3-aminobutan-1-ol, N-ethyl-3-aminobutan-1-ol, 1-aminobutan-4-ol, N-methyl-1-aminobutan-4-ol, N-ethyl-1-aminobutan-4-ol, 1-amino-2-methylpropan-2-ol, 2-amino-2-methylpropan-1-ol, 1-aminopentan-4-ol, 2-amino-4-methylpentan-1-ol, 2-aminohexan-1-ol, 3-aminoheptan-4-ol, 1-aminoctan-2-ol, 5-aminoctan-4-ol, 1-aminopropan-2,3-diol, 2-aminopropan-1,3-diol, tris(oxymethyl)aminomethane, 1,2-diaminopropan-3-ol, 1,3-diaminopropan-2-ol, 2-(2-aminoethoxy)**ethanol**, and 2-(2-aminoethylamino)**ethanol**.** (*emphasis added*)

Concerning the preferred intended use, Abe, Hisaki teaches the following:

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[0006] Thus, an object of the present invention is to provide a **photoresist stripper** which is capable of easily removing **photoresist** film formed on an inorganic substrate, **photoresist** residues, and dust or similar matter generated during etching process in the production of liquid crystal display elements or **semiconductor** elements, and which is highly anticorrosive to various materials such as **semiconductor** layer materials, conductive materials, and insulating materials. Another object of the present invention is to provide a process for stripping **photoresist**. (*emphasis added*)

Concerning the commercial phosphate ester surfactants, Abe, Hisaki teaches the following:

[0024] In the compounds falling under the definition of the above formula (4) or (5), the C1-C30 alkyl group is preferably a C2-C12 alkyl group, and the C7-C30 alkylaryl group is preferably a C14-C18 alkylaryl group. Commercial products of the phosphate ester surfactants are preferably used. Examples include **Adekacol** (product of Asahi Denka Kogyo K.K.), **Plysurf** (product of Dai-Ichi Kogyo Seiyaku Co., Ltd.), **Phosphanol** (product of Toho Chemical Industry Co., Ltd.), and **Newcol** and **Antox** (products of Nippon Nyukazai Co., Ltd.). (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishikawa, Kiyoshi (US20040104196).

Concerning the phosphate, phosphate ester and the commercial phosphate ester surfactants, Ishikawa, Kiyoshi teaches the following:

[0050] To mention specific examples, **phosphate** esters of polyoxyethylene that can be used as surfactants are commercially available under trade names "PLYSURF A212E" and "PLYSURF A210G" from Dai-ichi Kogyo Seiyaku Co., Ltd. (*emphasis added*)

Concerning the alkanolamine and the alcohol, Ishikawa, Kiyoshi teaches the following:

[0034] The over-coating agent for forming fine patterns may additionally contain water-soluble amines. Preferred ones include amines having pKa (acid dissociation constant) values of 7.5-13 in aqueous solution at 25.degree. C. in view of the prevention of the generation of impurities and pH adjustment. Specific examples include the following: **alkanolamines**, such as **monoethanolamine**, **diethanolamine**, **triethanolamine**, **2-(2-aminoethoxy)ethanol**, **N,N-dimethylethanolamine**, **N,N-diethylethanolamine**, **N,N-dibutylethanolamine**, **N-methylethanolamine**, **N-ethylethanolamine**, **N-butylethanolamine**, **N-methyldiethanolamine**, **monoisopropanolamine**, **diisopropanolamine** and **trisopropanolamine**; polyalkylenepolyamines, such as **diethylenetriamine**, **triethylenetetramine**, **propylenediamine**, **N,N-diethylethylenediamine**, **1,4-butanediamine**, **N-ethylmethylenediamine**, **1,2-propanediamine**, **1,3-propanediamine** and **1,6-hexanediamine**; aliphatic amines,

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such as triethylamine, 2-ethyl-hexylamine, dioctylamine, tributylamine, tripropylamine, triallylamine, heptylamine and cyclohexylamine; aromatic amines, such as benzylamine and diphenylamine; and cyclic amines, such as piperazine, N-methyl-piperazine and hydroxyethylpiperazine. Preferred water-soluble amines are those having boiling points of 140.degree. C. (760 mmHg) and above, as exemplified by **monoethanolamine** and **triethanolamine**. (*emphasis added*)

Concerning the preferred intended use, Ishikawa, Kiyoshi teaches the following:

[0056] The heating temperature is not limited to any particular value as long as it is high enough to cause thermal shrinkage of the film of the over-coating agent and form or define a fine pattern. Heating is preferably done at a temperature that will not cause thermal fluidizing of the **photoresist** pattern. The temperature that will not cause thermal fluidizing of the **photoresist** pattern is such a temperature that when a substrate on which the **photoresist** pattern has been formed but no film of the over-coating agent has been formed is heated, the **photoresist** pattern will not experience any dimensional changes. Performing a heat treatment under such temperature conditions is very effective for various reasons, e.g. a fine-line pattern of good profile can be formed more efficiently and the duty ratio in the plane of a **wafer**, or the dependency on the spacing between **photoresist** patterns in the plane of a **wafer**, can be reduced. Considering the softening points of a variety of **photoresist** compositions employed in current photolithographic techniques, the preferred heat treatment is usually performed within a temperature range of about 80-160.degree. C. for 30-90 seconds, provided that the temperature is not high enough to cause thermal fluidizing of the **photoresist**. (*emphasis added*)

Concerning the phosphate ester surfactant, Ishikawa, Kiyoshi teaches the following:

[0065] A copolymer containing polyacrylate (PAA) and polyvinylpyrrolidone (PVP) [6.36 g; PAA:PVP=2:1 (polymerization ratio)], triethanolamine (0.57 g) and a polyoxyethylene **phosphate ester surfactant** (0.07 g; "PLYSURF A210G", product of Dai-ichi Kogyo Seiyaku Co, Ltd.) were dissolved in water (93 g) to prepare an over-coating agent. (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe, Hisaki (US20020009674).

Concerning the phosphate, Abe, Hisaki teaches the following:

[0022] Examples of the phosphorus-containing compounds (4) include **phosphoric acid** and its related acids, **phosphate surfactants** and **phosphonic acid chelating agents**. The term "**phosphoric acid and its related acids**" as used herein includes **orthophosphoric acid**, **hypophosphoric acid**, **phosphorous acid**, **hypophosphorous acid**, **polyphosphoric acids** such as **pyrophosphoric acid**,

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trimetaphosphoric acid and tetrametaphosphoric acid, polyphosphorous acids, and polymetaphosphorous acids. In the present invention, ammonium salts, amine salts and quaternary ammonium salts of these "phosphoric acid and its related acids" may also be used as the phosphorus-containing compound (4). (*emphasis added*)

Concerning the alkanolamine, alcohol and the preferred intended use, Abe, Hisaki teaches the following:

2. The photoresist stripping composition according to claim 1, wherein said nitrogen-containing organohydroxyl compound is at least one compound selected from the group consisting of **monoethanolamine**, **diethanolamine**, **triethanolamine**, **N-methylethanolamine**, **N,N-dimethylethanolamine**, **N-ethylethanolamine**, **N,N-diethylethanolamine**, **propanolamine**, **N,N-dimethylpropanolamine**, **N-ethylpropanolamine**, **N,N-diethylpropanolamine**-, **2-(2-aminoethoxy)ethanol**, **N-hydroxyethylpiperazine**, **4-(2-hydroxyethyl)morpholine**, **2-(2-hydroxyethyl)pyridine**, **2-piperidine methanol** and **N-methyl-4-piperidinol**. (*emphasis added*)

Concerning the commercial phosphate ester surfactants, Abe, Hisaki teaches the following:

[0027] The phosphate surfactants may be commercially available as ADEKACOL (produced by Asahi Denka Kogyo Co., Ltd.), PLYSURF (produced by Dai-Ichi Kogyo Seiyaku Co., Ltd.), PHOSPHANOL (Toho Kagaku Kogyo Co., LTD.) and NEWCOL and ANTOX (produced by Nippon Nyukazai Co., Ltd.). (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaneko, Fumitake (US20050009365).

Concerning the phosphate, phosphate ester and the commercial phosphate ester surfactants, Kaneko, Fumitake teaches the following:

[0031] To mention specific examples, phosphate esters of poly-oxyethylene that can be used as surfactants are commercially available under trade names "PLYSURF A212E" and "PLYSURF A210G" from Dai-ichi Kogyo Seiyaku Co., Ltd. (*emphasis added*)

Concerning the alkanolamine and the alcohol, Kaneko, Fumitake teaches the following:

[0052] The over-coating agent for forming fine patterns may additionally contain water-soluble amines. Preferred ones include amines having pKa (acid dissociation constant) values of 7.5-13 in aqueous solution at 25.degree. C. in view of the prevention of the generation of Impurities and pH adjustment. Specific examples include the following: **alkanolamines**, such as **monoethanolamine**, **diethanolamine**, **triethanolamine**, **2-(2-aminoethoxy)ethanol**, **N,N-dimethylethanolamine**, **N,N-diethylethanolamine**,

N,N-dibutylethanolamine, N-methylethanolamine, N-ethylethanolamine, N-butylethanolamine, N-methyldiethanolamine, monoisopropanolamine, diisopropanolamine and triisopropanolamine; polyalkylenepolyamines, such as diethylenetriamine, triethylenetetramine, propylenediamine, N,N-diethylethylenediamine, 1,4-butanediamine, N-ethyl-ethylenediamine, 1,2-propanediamine, 1,3-propanediamine and 1,6-hexanediamine; aliphatic amines, such as triethylamine, 2-ethyl-hexylamine, dioctylamine, tributylamine, tripropylamine, triallylamine, heptylamine and cyclohexylamine; aromatic amines, such as benzylamine and diphenylamine; and cyclic amines, such as piperazine, N-methyl-piperazine and hydroxyethylpiperazine. Preferred water-soluble amines are those having boiling points of 140.degree. C. (760 mmHg) and above, as exemplified by **monoethanolamine** and **triethanolamine**. (*emphasis added*)

Concerning the preferred intended use, Kaneko, Fumitake teaches the following:

[0068] The heating temperature is not limited to any particular value as long as it is high enough to cause thermal shrinkage of the film of the over-coating agent and form or define a fine pattern. Heating is preferably done at a temperature that will not cause thermal fluidizing of the photo-resist pattern. The temperatur that will not cause thermal fluidizing of the **photoresist** pattern Is such a temperature that when a substrate on which the **photoresist** pattern has been formed but no film of the over-coating agent has been formed is heated, the **photoresist** pattern will not experience any dimensional changes. Performing a heat treatment under such temperature conditions is very effective for various reasons, e.g. a fine-line pattern of good profile can be formed more efficiently and the duty ratio in the plane of a wafer, or the dependency on the spacing between **photoresist** patterns in the plane of a wafer, can be reduced. Considering the softening points of a variety of **photoresist** compositions employed in current photolithographic techniques, the preferred heat treatment is usually performed within a temperature range of about 80- 160.degree. C. for 30-90 seconds, provided that the temperature is not high enough to cause thermal fludizing of the **photoresist**. (*emphasis added*)

Concerning the phosphate ester surfactant, Kaneko, Fumitake teaches the following:

[0079] A copolymer including polyvinylpyrrolidone (PVP) polyacrylate (PAA) [6.37 g; NVP copolymer, NOF Corporation], triethanolamine (0.57 g) and a polyoxyethylene **phosphate ester surfactant** (0.06 g; "PLYSURF A21OG", product of Dai-ichi Kogyo Seiyaku Co, Ltd.) were dissolved in water (93 g) to prepare an over-coating agent. (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaneko, Fumitake (US20040106737).

Concerning the phosphate, phosphate ester and the commercial phosphate ester surfactants, Kaneko, Fumitake teaches the following:

[0051] To mention specific examples, **phosphate esters of polyoxyethylene** that can be used as surfactants are commercially available under trade names "PLYSURF A212E" and "PLYSURF A210G" from Dai-ichi Kogyo Seiyaku Co., Ltd. (*emphasis added*)

Concerning the alkanolamine and the alcohol, Kaneko, Fumitake teaches the following:

[0035] The over-coating agent for forming fine patterns may additionally contain water-soluble amines. For special purposes such as preventing the generation of impurities and pH adjustment, water-soluble amines that have pKa (acid dissociation constant) values of 7.5-13 in aqueous solution at 25.degree. C. are preferably used. Specific examples include the following: **alkanolamines**, such as **monoethanolamine**, **diethanolamine**, **triethanolamine**, 2-(2-aminoethoxy)ethanol, N,N-dimethylethanolamine, N,N-diethylethanolamine, N,N-dibutylethanolamine, N-methylethanolamine, N-ethylethanolamine, N-butylethanolamine, N-methyldiethanolamine, monoisopropanolamine, diisopropanolamine and triisopropanolamine; polyalkylenepolyamines, such as diethylenetriamine, triethylenetetramine, propylenediamine, N,N-diethylethylenediamine, 1,4-butanediamine, N-ethyl-ethylenediamine, 1,2-propanediamine, 1,3-propanediamine and 1,6-hexanediamine; aliphatic amines, such as triethylamine, 2-ethyl-hexylamine, dioctylamine, tributylamine, tripropylamine, triallylamine, heptylamine and cyclohexylamine; aromatic amines, such as benzylamine and diphenylamine; and cyclic amines, such as piperazine, N-methyl-piperazine and hydroxyethylpiperazine. Preferred water-soluble amines are those having boiling points of 140.degree. C. (760 mmHg) and above, as exemplified by **monoethanolamine** and **triethanolamine**. (*emphasis added*)

Concerning the preferred intended use, Kaneko, Fumitake teaches the following:

[0064] The heating temperature is not limited to any particular value as long as it is high enough to cause thermal shrinkage of the film of the over-coating agent and form or define a fine pattern. Heating is preferably done at a temperature that will not cause thermal fluidizing of the **photoresist** pattern. The temperature that will not cause thermal fluidizing of the **photoresist** pattern is such a temperature that when a substrate on which the **photoresist** pattern has been formed but no film of the over-coating agent has been formed is heated, the **photoresist** pattern will not experience any dimensional changes. Performing a heat treatment under such temperature conditions is very effective for various reasons, e.g. a fine-line pattern of good profile can be formed more efficiently and the duty ratio in the plane of a **wafer**, or the dependency on the spacing between **photoresist** patterns in the plane of a **wafer**, can be reduced. Considering the softening points of a variety of **photoresist** compositions employed in current photolithographic

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techniques, the preferred heat treatment is usually performed within a temperature range of about 80-160.degree. C. for 30-90 seconds, provided that the temperature is not high enough to cause thermal fluidizing of the **photoresist**. (*emphasis added*)

Concerning the phosphate ester surfactant, Kaneko, Fumitake teaches the following:

[0081] A copolymer of PAA and PVP [2 g; PAA:PVP=2:1 (polymerization ratio)] and a **polyoxyethylene phosphate ester surfactant** (0.02 g; "PLYSURF A210G", product of Dai-ichi Kogyo Seiyaku Co, Ltd.) were dissolved in water (33 g) to prepare an over-coating agent. (*emphasis added*)

Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Wilson, Neil R. (US20040002437).

Concerning the phosphate and the phosphate ester, Wilson, Neil R. teaches the following:

[0049] The flushing solutions of the invention can also comprise a solvent component, an alkaline source, and an aliphatic **phosphate** ester in combination with a buffering agent. The buffering agent is preferably a diprotic or triprotic inorganic acid, e.g., **phosphoric** acid and/or boric acid. If the aliphatic **phosphate** ester is used without the buffering agent, the flushing solution exhibits little, if any, corrosion inhibition of the aluminum or aluminum-alloy spray equipment. Likewise, if the buffering agent is used without the aliphatic **phosphate** ester or the fatty acid salt, again little, if any, corrosion inhibition is observed. Corrosion inhibition is provided, however, in a flushing solution of the invention that contains both the **phosphate** ester and the buffering agent. Although not required for purposes of providing effective corrosion inhibition, buffering agents may also be used in combination with fatty acid salts. Likewise, combinations of one or more fatty acid salts, one or more aliphatic **phosphate** esters and one or more buffering agents may be employed in the corrosion inhibitor component of the flushing solutions. (*emphasis added*)

Concerning the alkanolamine and the alcohol, Wilson, Neil R. teaches the following:

[0044] Amines, **alkanolamines**, and mixtures of amines and/or **alkanolamines** may be used to form the fatty acid salts. The preferred **alkanolamines** are selected from **ethanolamine**, **diethanolamine**, **triethanolamine**, **dimethylethanolamine**, **diisopropanolamine**, **isopropanolamine**, **methylisopropanolamine**, **n-butylmethanolamine**, **2-methylaminoethanol**, **n-butylaminoethanol**, **diethylaminoethanol**, **2-amino-2-methyl-1-propanol**, or **phenyl diethanolamine**. The most preferred **alkanolamines** are **diisopropanolamine (DIPA)** and **isopropanolamine**. Amines such as alkylamines (e.g., triethylamine) and oxazolidines can also be used. Preferably, the amine or **alkanolamine** is added in stoichiometric excess relative to the fatty acid so as to also act as the alkaline source. (*emphasis added*)

Concerning the alkoxyalkyl alcohol, Wilson, Neil R. teaches the following:

[0002] Current commercial practice utilizes aqueous flushing solutions that contain amines and an organic solvent selected from lower alcohols and **glycol ethers**. The flushing solutions can be used to remove paint and other coatings from surfaces and coating application equipment. Generally, alkanolamines like dimethylethanolamine, isopropanolamine and diethanolamine are used. Flushing solutions can be prepared from flushing concentrates, which are marketed to the end user. The flushing concentrates are usually diluted to 5% to 15% by volume with deionized water. (*emphasis added*)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglass McGinty can be reached on (571)272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Gregory E. Webb
Primary Examiner
Art Unit 1751

gew